Summary of Intel's Reply Comment

June 6, 2013

For the 600MHz Band Plan, Intel supports:

"Down from 51" band plan approach:

- NPRM proposed multiple approaches, including Down from 51 and Split.
- The Split band approach is the lead FCC proposal
- Down from 51 approach has the most support in the comment record
 - Fewer operational concerns than the split approach

			Ch37				Ch51
Down From 51 approach				Guard Band	DOWNLINK	Duplex Gap	UPLINK
Split approach Guard Band DOWNLINK			Duplex Gap	+ TV Channels	Guard Band	UPLINK	

Intel supports (continued):

Scalable national band plan:

- Flexible configurations (3-9 paired channels) depending on cleared spectrum.
- 3 Building Blocks:
 - #1 Primary building block: paired nationwide channels + duplex gap
 - Contiguous, in the Ch 38-51 range
 - #2 Can be TV & guard band, or additional mobile channels
 - Appends to #1 and fills in what's left above ch 37
 - #3 Additional mobile block below ch 37 for high clearing

Plus special-case modifications for TV to remain above ch37 in congested markets.

(more details to follow)

Intel supports (continued):

Protection bands (duplex gap and guard band):

- Maximize licensed use: no larger than technically reasonable.
- Excess size cuts into licensed spectrum allocation.

Duplex gap: Recommend 10-12 MHz wide

- Determined by technical and practical filtering limitations
- Challenging but feasible

Guard band: Recommend 10-12 MHz wide

- Determined by technical and practical filtering limitations
- Most challenging case: mobile DL adjacent to high power TV

Services in guard band or duplex gap:

Any operations/services permitted should:

- be well-defined prior to the auction
 - Promotes bidder confidence
- not cause harmful interference to adjacent licensed channels
 - Otherwise, spectrally inferior and not fungible.

Specifics of Intel's Scalable Band Plan Proposal and the 3 Building Blocks:

Note: Superscripts in following slides refer to page numbers in our Reply Comments.

Building Block #1. Primary Building Block

- Consists of nationwide paired spectrum in ch 38-51 range, plus duplex gap
- Optimal size determined from repacking & TV electing to go off air. (pg 13-14)
 - Maximize population coverage, minimize exclusion zones.
- Flexible: can accommodate 3, 4, 5, 6, or 7 paired channels (pg 12-15)
 - >7 paired channels accommodated via Building Block #3

Example building blocks from our Reply Comment: 5 paired channels

Building blocks expand/contract with more/less paired channels

28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
554-	560-	566-	572-	578-	584-	590-	596-	602-	608-	614-	620-	626-	632-	638-	644-	650-	656-	662-	668-	674-	680-	686-	692-
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Building Block #2. (Appends to # 1)

- BB #1 and #2 work together to cover ch 38-51
 - As BB#1 expands, BB #2 contracts, and vise versa
- If <84MHz clears, can be either SDL (Supplemental Downlink) or remaining TV stations.^(pg 6)
 - Choice depends on TV remaining above channel 37, by market
- If >84MHz clears, BB #2 becomes downlink for a second paired block
 - (Not shown in the graphic below)

28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
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Building Block #3. (Appends to #2, via channel 37 which remains in place)

- Used for spectrum below Ch 37
 - When some markets clear >84MHz, but most don't.
- Can be either SDL or remaining TV stations (subject to exclusion zones).
 - Choice depends on TV stations remaining in ch 31-36.
- Flexible: supports other configurations (e.g. more paired channels (pg 6))
 - o If 8 or 9 paired channels clear, BB#3 becomes uplink, BB#2 downlink.
 - This gives a second block of 3-4 paired channels

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Flexible support, up to 9 paired channels (or as few as 3)

Review: BB #1 + BB #2 covers ch 38-51; BB #3 covers below ch 37

- Ch 38-51 is 84 MHz: supports as few as 3 or as many as 7 paired channels
 - Straightforward adjustments to size of BB #1 and BB #2
 - BB #2 shrinks to zero if 7 paired channels
- For 8 or 9 paired channels, need more spectrum than Ch 38-51.
 - Repurpose BB #3 to increase range
 - Ch 37 disrupts continuity so a 2nd paired block is created
 - Uses BB #3 for uplink, BB #2 for downlink
 - 5 paired (from primary paired block) <u>plus</u> 3 or 4 paired from second paired block

NOTE: The impact of antenna issues (bandwidth, quantity, size), device form-factor, and interference varies as the band plan expands.

Congested Market Building Blocks (pgs 5, 7-8)

- Only used in certain congested markets
 - More TV remaining above ch 37 than BB #2 can accommodate
- Replaces BB #1 and retains same overall size, location.
 - Selected mobile uplink replaced with TV: downlink only.
 - o Excludes channels rather than entire market
 - Otherwise: exclude entire market; or reduce paired channels nationwide due to a few congested markets
 - Highly congested markets may still need full market exclusion zone

28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
554-	560-	566-	572-	578-	584-	590-	596-	602-	608-	614-	620-	626-	632-	638-	644-	650-	656-	662-	668-	674-	680-	686-	692-
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